

Two newly recorded species of whitefly (Hemiptera: Aleyrodidae) from China

Jirui WANG, Yuzhou DU^①

School of Horticulture, Plant Protection & Institute of Applied Entomology, Yangzhou University, Yangzhou, Jiangsu 225009, China

Abstract: Two species of whitefly (Hemiptera: Aleyrodidae), *Aleuroclava ayyari* (Sundararaj & David) and *Aleurotrachelus grewiae* Takahashi, new to the known fauna of China, are redescribed with morphological illustrations and photographs from a scanning electron microscope (SEM). *A. ayyari* is characterized by the presence of two pairs of long subdorsal setae on the cephalic region and first abdominal segment. *A. grewiae* is characterized by the pupa case sclerotized, pointed at both ends and the base of abdomen rounded at the middle. Specimens are deposited in the Insect Collection of Yangzhou University.

Key words: Sternorrhyncha; Aleyrodoidea; puparia; taxonomy

中国粉虱科二新纪录种记述（半翅目：粉虱科）

王吉锐，杜予州^①

扬州大学园艺与植物保护学院暨应用昆虫研究所，江苏 扬州 225009

摘要：记述粉虱科 2 中国新纪录种：木姜子棒粉虱 *Aleuroclava ayyari* (Sundararaj & David) 和扁担杆褶粉虱 *Aleurotrachelus grewiae* Takahashi。用环境扫描电镜对其伪蛹进行拍照，并依据玻片标本进行描述和绘图。木姜子棒粉虱主要鉴别特征是在头部和第 1 腹节分别着生 1 对长的亚背区刚毛。扁担杆褶粉虱主要鉴定特征是蛹壳硬化，头尾两端较尖，腹部中央基部较圆。标本存放在扬州大学昆虫标本室。

关键词：胸喙亚目；粉虱总科；伪蛹；分类

Introduction

The genus *Aleuroclava* was originally established by Singh (1931) with *A. complex* Singh as its type species by monotypy. *Aleuroclava* is an Old World genus with 118 species, of which 37 species including 4 undetermined species are from China (Martin & Mound 2007; Evans 2008; Martin & Lau 2011; Wang *et al.* 2014). *Aleuroclava* species occur predominantly in the Oriental and Austro-Oriental Regions. A few species also occur in the Palaearctic and sub-Saharan (Afro - tropical) Regions (Dubey & Sundararaj 2005). Jesudasan & David (1990) made a revision of *Aleuroclava* and *Aleurotuberculatus*. Martin (1999) regarded *Aleurotuberculatus* as a junior synonym of *Aleuroclava*, and some authors subsequently agreed (Dubey & Sundararaj 2005).

The genus *Aleurotrachelus* was originally established by Quaintance & Baker (1914) for black puparia having wax secreting glands at base of marginal teeth and a pair of lateral

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①Corresponding author, E-mail: yzdu@yzu.edu.cn

longitudinal folds, with *Aleurodes tracheifer* Quaintance as its type species by original designation. This is a mainly Old World genus and one of the largest assemblages of whitefly species (Dubey & Ko 2010). Currently, 74 species are listed in this genus (Martin & Mound 2007), of which 17 species are recognised in China. This genus is currently a morphologically diverse assemblage of species, and possibly not a monophyletic group (Manzari & Quicke 2006). This genus is similar to *Crenidorsum*, but lacks the scallop-like thickenings on the subdorsum and the vasiform orifice is not elevated. *Aleurotrachelus* also differs from *Cohicaleyrodes* due to having glandular bases on the marginal teeth, and the vasiform orifice of this genus is subcircular to subcordate whereas the vasiform orifice of *Cohicaleyrodes* is cordate (David *et al.* 2006).

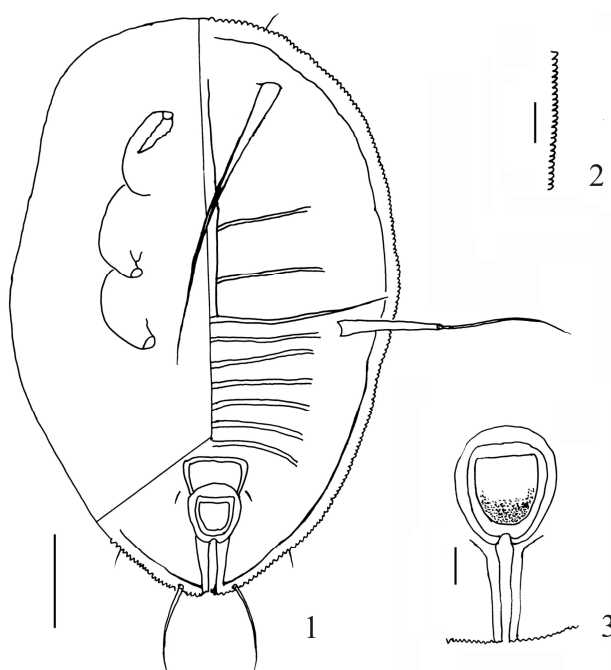
Previously, *Aleuroclava ayyari* (Sundararaj & David) and *Aleurotrachelus grewiae* Takahashi were only known from India and Malaysia respectively. But we collected these two species on *Litsea monopetala* and *Ficus hispida* in South China. Detailed descriptions of these two newly recorded species from China are provided in this paper.

Taxonomy

1. *Aleuroclava ayyari* (Sundararaj & David) (Figs. 1–3, 7, 8), new record to China

Martiniella ayyari Sundararaj & David, 1993, *Entomon*, 18 (1): 95.

Aleuroclava ayyari (Sundararaj & David); Martin, 1999, *Technical Paper, CSIRO Entomology*, 38: 31.



Figures 1–3. *Aleuroclava ayyari* (Sundararaj & David). 1. Puparium; 2. Marginal teeth; 3. Vasiform orifice, caudal furrow. (after Sundararaj & David, 1993). Scale bars = 0.1 mm (Fig. 1); 0.03 mm (Fig. 2); 0.05 mm (Fig. 3).

Diagnosis. Puparia: white, 0.55–0.6 mm in length and 0.42 mm in width; oval, broadest across the first abdominal segment region. Margin finely crenulate, 33–36 crenulations in 0.1 mm, anterior marginal setae 12–14 μm long, posterior marginal setae 21–24 μm long. Two pairs of subdorsal setae: one pair on cephalic region, 185–200 μm long and the other placed on the first abdominal segment, 140–150 μm long. Transverse moulting suture reaches the margin while the longitudinal moulting suture reaches the submargin. Vasiform orifice cordate, longer than wide, 50 μm long, 47.5 μm wide; operculum cordate, almost covering the orifice, as long as wide, 32.5 μm long and wide. A pair of ventral abdominal setae 12.5 μm long and 32.5 μm apart. Caudal tracheal folds elongated, 52.5 μm long and 7.5 μm wide as its caudal end (Sundararaj & David 1993).

Specimens examined. 13 puparia on 12 slides, on *Litsea monopetala*, **China**, Guangxi, Daming Mt., 26-VII-2011, Jirui WANG. Deposited in Insect Collection of Yangzhou University.

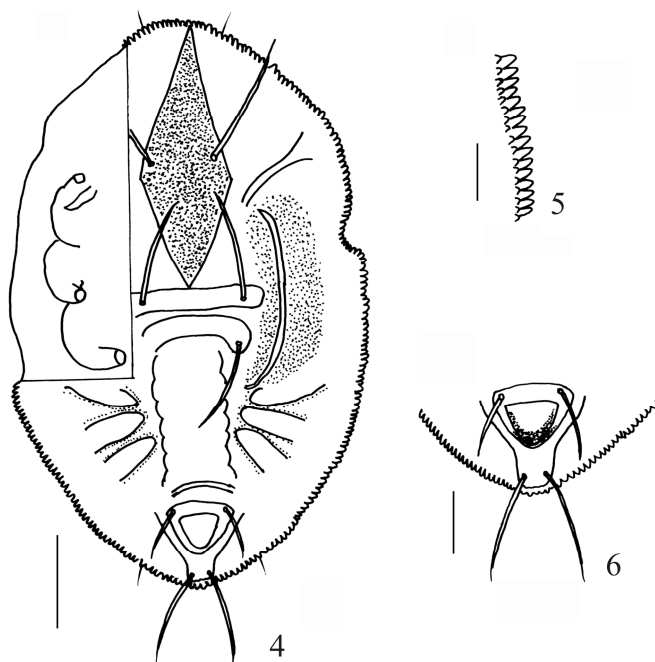
Distribution. China (Guangxi); India.

Host plants. *Litsea monopetala*, *Mussaenda* sp. recorded by Sundararaj & David (1993).

Remarks. This species was first described under the genus *Martiniella* Jesudasan & David, and then was synonymised to the genus *Aleuroclava* Singh by Martin (1999). This species is extremely similar to *A. lefroyi* (Sundararaj & David) but can be easily distinguished from the shape of vasiform orifice and operculum, and the absence of the granules on subdorsum.

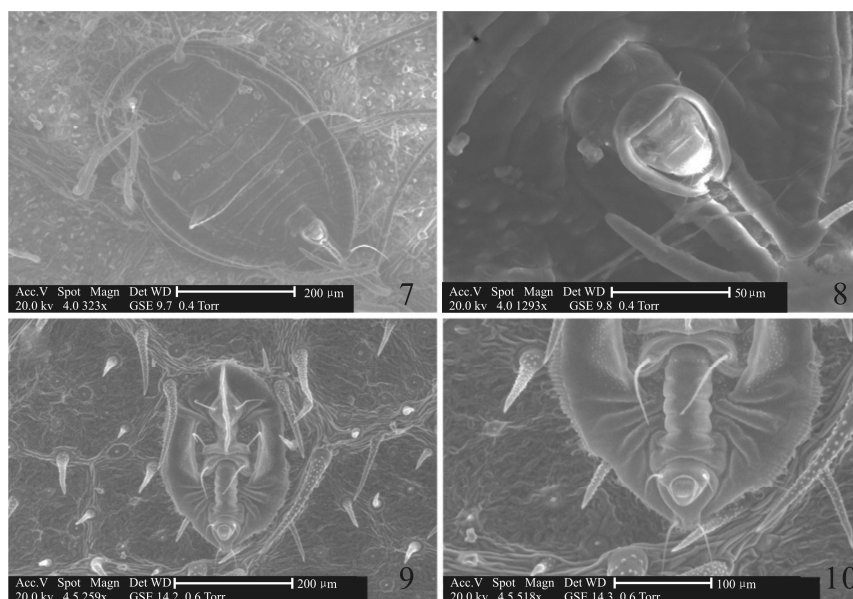
2. *Aleurotrachelus grewiae* Takahashi (Figs. 4–6, 9, 10), new record to China

Aleurotrachelus grewiae Takahashi, 1952, *Mushi*, 24: 25.



Figures 4–6. *Aleurotrachelus grewiae* Takahashi. 4. Puparium; 5. Marginal teeth; 6. Vasiform orifice. Scale bars = 0.1 mm (Fig. 4); 0.03 mm (Fig. 5); 0.05 mm (Fig. 6).

Diagnosis. Puparia: black, sclerotized. 0.46–0.63 mm in length and 0.27–0.34 mm in width; elliptic, pointed at both ends; with 1–3 irregular shallow indentations on the margin; some white wax along the margin. Marginal teeth small, in two rows, the outer teeth wider than long, nearly triangular, pointed; inner teeth smaller, crenulate; a pair of short setae present on the anterior and posterior margin. A median ridge which is prominent and lozenge in shape on cephalothorax, reaching the metanotum. Abdominal segment faintly discernible, the basal segment much produced anteriorly and rounded at the middle part. Three pairs of lateral ridges on the abdomen nearly reaching the margin, the middle pair not extending anteriorly at the base. Dorsum with many small granules on the median ridge of cephalothorax, between the longitudinal folds, on the basal parts of lateral ridges, and laterad of the median segment area of abdomen. Dorsum with 5 pairs of very long setae of which 3 pairs are on cephalothorax (1 cephalic pair and 2 prothoracic pairs). Vasiform orifice subcordate, a little longer than wide. Operculum nearly filling the orifice, with a pair of darker spots at the base. Lingula not exposed.



Figures 7–10. 7, 8. SEM of *Aleuroclava ayyari* (Sundararaj & David). 9, 10. SEM of *Aleurotrachelus grewiae* Takahashi. 7, 9. Puparium; 8. Vasiform orifice and caudal furrow; 10. Vasiform orifice.

Specimens examined. 15 puparia on 9 slides, on *Ficus hispida*, **China**, Guangdong, South China Agricultural University, 09-V-2012, Jirui WANG. Deposited in Insect Collection of Yangzhou University.

Distribution. China (Guangdong); Malaya.

Host plants. *Ficus hispida*, *Grewia tomentosa* recorded by Takahashi (1952).

Remarks. This species was first described under the genus *Martiniella* Jesudasan & David, and then was synonymised to the genus *Aleuroclava* Singh by Martin (1999). This species is extremely similar to *A. lefroyi* (Sundararaj & David) but can be easily distinguished from the shape of vasiform orifice and operculum, and the absence of the granules on subdorsum.

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